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between India and Europe. That contingency had been provided for to a certain extent, because the tract of country that really offered those difficulties was not more than 16 to 18 miles in length. There was a bold headland of from 1400 to 1600 feet in height, which he visited last year, overhanging the sea; and between it and the sea it was impossible to carry the line. The cliffs, from their sandy formation, were continually falling down in loose lumps which would destroy any line that might be carried along the surface below. A submarine cable 20 miles in length, coated with india rubber, was sent out some months ago, which would, if the difficulty of carrying the line inland continued to be the same, be laid under water along that part of the coast. Sir Henry Rawlinson had mentioned as a wonder that the Russians were able to carry out their lines so quickly. The fact was the whole country was their own; they had to ask no permission. We had been able to commence, and to set to work; and if there had been no political difficulties, it would have been done long ago. These difficulties could not in every case be got over; but it so happened along the whole of that coast the conditions generally were more favourable for a submarine cable than, with the one exception of temperature, any known coast in the world. The sole objection might be that the depths were a little too small. In the Persian Gulf they had a depth rarely exceeding 50 fathoms, and the average depth along the line was from 25, 30, to 38 fathoms. With regard to the cable proposed to be laid between Gwadar and the mouth of the Gulf the difficulties were a little greater, because at a distance of from 8, 10, 20, or 25 miles from the coast the bottom, although uniformly of soft sand, increased very rapidly in depth, and the cable would have to be laid rather tortuously in order to keep it within the depths selected as necessary. If the Persian line could not soon be completed, it was proposed to have a terminus near the mouth of the Euphrates, and at a point to which river steamers could always have access; and it was hoped that by this means we might be brought within two days' communication of India. Even if the Arab tribes could not be conciliated, communication would be delayed only by the time the steamer would take to run from Bagdad down the Tigris. It was always recognised as a most important thing to diminish, as far as possible, the temptation that the stores offered to pillagers. Partly with that view, and also to prevent oxidization, the wire was covered with zinc. This the Arabs were unable to weld, or to use for tying up bundles, on account of its thickness. It had another advantage; being the only metal in that country that was galvanized, it could always be recognised if stolen. If all went on well, long before this time next year the whole line throughout, including the part from Bagdad down to Lower Mesopotamia, would be completed, and the duplicate line through Persia in a few months later.

CAPTAIN CHAMPNEYS said he had travelled with Colonel Stuart from Bushire to Shiraz, and thence to Teheran, and along that line they met with no difficulties of any description. The necessary arrangements were now being made with the Persian Government to carry out the line.

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The second Paper read was—

2. *On the Harbour of Sedashagur; and Remarks on the Sea Ports of India.*

By Inspector DUNCAN MACPHERSON, M.D., F.R.G.S.

BEGINNING at Calcutta, we find the East India Irrigation Company engaged in great works from the Ganges to the Mahanuddy, near Cuttack, a river already navigable for small craft near its mouth.

Further south, at Coringa, the mouth of the Godavery has been so far improved, that ships of large burden can now advance into the centre of this district, from whence a network of navigable canals already communicate with the middle Godavery; beyond this, works of magnitude are in progress to render the upper stream available for steamers, which will run to the great cotton-fields upwards of 600 miles from the sea.

Proceeding down the coast to Nellore, we find the Madras Irrigation Company bringing to rapid completion a grand system of similar channels from the Kistna River at Bellary, to pierce the great cotton and indigo fields of that and the adjoining districts of Kurnul, &c., in order to communicate with the sea at the mouth of the Penar River, adjoining the populous town of Nellore; while at the Presidency City of Madras, the terminus of a railway completed for 400 miles to the west, with ramifying branches to the north and east, a pier now spans the furious surf, alongside of which ships' boats land and embark passengers and goods.

Some 200 miles further south, at Negapatam and Tutecoreen, the Trichinopoly Railway brings down the produce from the rich Delta of Tanjore.

The removal of the obstructions which impede the navigation of the Paunbaum channel still engages the efforts of Government.

At Cochin, which possesses natural inland water communications for many miles, ships of 1000 tons have been built; and the operations of an ordinary dredge on the bar at the mouth of the river would enable ships of that burden to proceed at all seasons to discharge their cargoes on the banks.

The western terminus of the Madras Railway at Beypur—a spot at all times of insignificant value, without population or trade, and unapproachable from sea by even coast craft, on account of the surf—has attained some importance as the entrepôt for the produce conveyed by it from the rich district of Coimbatour. But the position, as an outlet for the rapidly accumulating produce of that coast, can never be of commercial value, owing to the insurmountable obstacles of the sea. The line must be prolonged to the north, some 300 miles to the noble harbour of Sedashagur, receiving in its progress the extensive trade and passenger traffic from several populous native towns, and from the numerous estates which are parallel with the coast into the interior, extending to and embracing the entire Neilgherry range, the Upper and Lower Wynaad, the Principality of Coorg, the Munserabad districts, North and South Canara; also scores of others on the Mysore Plateau, all in the possession of European colonists, engaged in the cultivation of cocoanut, coffee, tea, spices, cinchona, &c.

It will be observed by the chart, that when the projected improvements in the harbour are completed, there will be a space of upwards of 21,000 acres available for anchorage, in a varying depth, reaching close in shore from 18 to 30 feet. The rocks and headlands on the coast are of lateritic formation—an excellent material for buildings; for it can be cut out soft from the mass into any shape, but speedily hardens on being exposed to the atmosphere. Granite exists in quantities as one approaches the mountains, and iron ore in masses on the left bank of the stream.

Carwar Head rises 700 feet above marine level. It is visible 25 miles from shore, and projects about a mile into the sea—the solitary headland on the coast from Bombay to Calcutta. It is to Carwar Head that this great bay is due. Even without the aid of the proposed pier, it secures a good anchorage during the south-west monsoon, while the islands give protection when the north-east winds prevail.

As a climate, Sedashagur is one of the few localities in India where cholera has been hitherto unknown. The projecting headland, with the sea on each side, makes the spot a perfect sea-coast sanitarium; and the neighbouring mountains, which rise some 3000 feet above the sea-level, offer a convenient place of resort for those who desire a residence in a more bracing climate than the sea-coast affords.

The PRESIDENT observed, Dr. Macpherson was a distinguished medical officer attached to the Indian service, who had travelled very largely over Eastern countries, and who was well known for his services in the Crimea and his description of the antiquities of Kertch; and they must thank him for his brief but very clear and valuable notice. He should be happy to hear the observations of any gentlemen present on the subject.

MR. MARKHAM said, the paper had brought to the notice of the Society the only port on the west coast of India that afforded safe anchorage during the south-west monsoon. Along the whole of that coast, from Bombay harbour to Cape Comorin, there was a tremendous surf, and trade was entirely at a standstill during the rainy season, from May to September. To those circumstances the importance of Sedashagur harbour was due. The Bombay Government was now fully alive to its advantages. A wall 300 feet long was already completed on the east side of the Beikool cove. Within a radius of 200 miles from Sedashagur there were rich cotton-producing districts, having 980,000 acres of cotton under cultivation, for which it was the only port. Its importance, as being the only port on that coast, with the exception of Bombay, that was open during every month of the year, could scarcely be over-estimated; the only matter for surprise was that it had not before been made available. He regretted that Lieutenant Taylor was not present, as to him the chief credit was due of having brought to notice the importance of the harbour of Sedashagur.

MR. FENWICK said there was a large and very valuable tract of country immediately in the rear of Sedashagur—the southern Mahratta country—the only country in India where New Orleans cotton had yet been produced in marketable quantities. That cotton, owing to want of communication,

took generally eight, ten, or twelve months to reach England, the country being closed during the four rainy months. The attention of Government had been directed to the coast to discover a port from which the produce might be shipped during those months, and Sedashagur was the port chosen. Another drawback was the want of good roads between the port and the southern Mahratta country. Government was now constructing roads, but the works had been suspended owing to the prevalence of fever in that district. It was a very curious fact that fever had been more prevalent during the last two years—since a stop had been put by the Government to forest-burning and the destruction of the jungle. He believed the true value of Sedashagur as a port would not be fully brought out until a railway was opened between it and these southern districts, because the most important produce of that country (the cotton) was not ready to be sent down to the coast till very late in April, by which time the rainy season had set in, and the cotton was liable to serious damage.

The PRESIDENT said he had only one observation to make as a geologist, which was, that the rock formation alluded to afforded great facilities for the construction of the necessary works in the harbour. It was one of the younger formations—the youngest certainly in that part of India—and the facility with which it could be extracted, and the manner in which it hardened under the atmosphere, were much in favour of all the works to be carried out in the harbour. The observations that had been made with regard to the railway were very important. He hoped Government would consider the circumstances, and forward such an undertaking with the same liberality with which they had established railways in other parts of India.

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*Tenth Meeting, Monday, April 13th, 1863.*

SIR RODERICK I. MURCHISON, K.C.B., PRESIDENT, in the Chair.

PRESENTATION.—*The Rev. R. W. Greaves was presented upon his Election.*

ELECTIONS.—*Colonel the Hon. St. George Foley, C.B. ; George Elder ; John Fisher ; J. H. Gladstone ; Charles Mouhot ; and Thomas Ogilvy, Esqrs., were elected Fellows.*

ACCESSIONS.—Among the donations to the Library and Map-rooms since the former Meeting were—Transactions of the Linnean Society, Vol. xxiii., Part 3, and Vol. xxiv., Part 1 ; the 13th Part of Philip's Atlas ; Admiralty Charts, Ordnance Maps, &c.

The PRESIDENT said he was sure that all who had been in the habit of attending the meetings must be well acquainted with the name of Henry Grinnell, of New York. He was a most remarkable man. An American merchant imbued with a strong spirit of philanthropy, and with a love and admiration for those of our countrymen who had explored the Arctic regions, he had spared no expense in fitting out expeditions to search for the relics of the lamented Franklin. He was assured by Captain Sherard Osborn that Mr. Grinnell had spent between 20,000*l.* and 30,000*l.* on this object alone. These were deeds which could never be forgotten, and it was mainly through his instru-

mentality that Mr. Hall, from Ohio, had been assisted in his adventurous enterprise in search of traces of the lost expedition. Mr. Hall went out in a whaler that touched only at parts of the coast very remote from where poor Franklin was lost. He then endeavoured in a little boat to reach that distant region; he, however, lost his boat, and was obliged to confine his explorations to the district in which he was embayed for two winters. During this long interval Mr. Hall made himself acquainted with the language of the Esquimaux; and obtained from the curious traditions which they had long preserved among them—handed down from mother to daughter—information respecting the Frobisher expedition, undertaken in the reign of Queen Elizabeth. Mr. Hall had brought home some relics of that expedition; and he had, moreover, discovered that what was marked on all maps as Frobisher Strait, is in reality a bay.

The first Paper read was—

1. *Frobisher Strait proved to be a Bay, and on the Fate of Five Men of the Arctic Expedition in the reign of Elizabeth.* By Mr. C. F. HALL, of Ohio; communicated by HENRY GRINNELL, Esq., F.R.G.S., of New York.

THE object of the Expedition undertaken by Mr. Hall was to make further search for traces of the Franklin party. In this he was supported and assisted by Mr. Henry Grinnell and other friends, and he besides received a free passage in a ship belonging to Messrs. Williams and Haven, of New London. He sailed on the 29th May, 1860, and on the 17th August reached a harbour on the west side of Davis Strait, a little north of "Frobisher Strait." Here he wintered among the Esquimaux, adopting their dress and habits, and learning their language. In the following spring, although he found it impracticable to reach King William Land for the original purpose of his voyage, he made an expedition of 43 days to the north with some natives, living at night in snow huts erected by the party. Obtaining the loan of a whale-boat, he then explored "Frobisher Strait," and after an excursion of 50 days satisfied himself that the so-called Strait was really a bay. He was detained in these regions another winter by the sudden setting in of ice, which imprisoned the ship in which he intended to return. In April and May, 1862, he made a sledge journey over a great portion of his previous year's route; and visiting the Countess of Warwick's Isle, he collected a number of relics, which he supposes to be those of the lost members of Frobisher's Expedition in 1576.

His supposition is founded partly on an identity of locality, and partly on a tradition among the Esquimaux, that very long ago some ships landed a party of white people; two ships are said to have come in one year, two or three in the next, and very many in the following. The natives spoke also of pieces of very heavy stone of a black colour, which he supposes to be iron, and other